

What is claimed is:

- 1 1. A method for supporting multiple mobile IP sessions with dynamically
2 allocated home IP addresses in a CDMA2000 network, the method comprising at
3 a Home Agent (HA) the steps of:
4 receiving a registration request ultimately sent from a Mobile Node (MN),
5 the request comprising a care-of address (COA) and a home IP address;
6 verifying if any mobility bindings exist for the MN;
7 if yes, verifying if the COA from the registration request is equal
8 to the COA from the latest registration request from the MN;
9 if no, verifying if the home IP address in the registration request is
10 zero;
11 if yes, verifying if the MN has reached its session number
12 limit;
13 if no:
14 creating a new mobile IP session for the
15 MN; and
16 if yes:
17 retrieving the home IP address associated
18 with the first mobility binding for the MN;
19 removing any other mobility binding for the
20 MN; and
21 returning a registration response.

- 1 2. The method of claim 1, wherein the step of creating a new session further
2 comprises the steps of:
3 allocating dynamically a home IP address for the MN; and
4 creating a mobility binding for the MN.
- 1 3. The method of claim 1, further comprising, if the home IP address in the
2 registration request is not zero, the step of:
3 refreshing the mobility binding.
- 1 4. The method of claim 1, further comprising, if no mobility bindings exist,
2 the step of:
3 creating a new mobile IP session for the MN comprising:
4 allocating dynamically a home IP address for the MN; and
5 creating a mobility binding for the MN.
- 1 5. The method of claim 1, further comprising, if the COA from the
2 registration request is equal to the COA from the latest registration request from
3 the MN, the steps of:
4 verifying if the home IP address in the registration request is zero; and
5 if yes, creating a new mobile IP session for the MN comprising:
6 allocating dynamically a home IP address for the MN; and
7 creating a mobility binding for the MN; and
8 if no, refreshing the mobility binding for the MN.
- 1 6. The method of claim 1, wherein the registration request is forwarded to
2 the HA by a Foreign Agent (FA).

- 1 7. The method of claim 6, further comprising, prior to forwarding by the FA
2 the registration request to the HA, the steps of:
3 sending by the FA a message to an Authentication, Authorisation and
4 Accounting Server (AAA) to verify if the AAA approves the registration request;
5 and
6 receiving by the FA a response from the AAA.
- 1 8. The method of claim 7, wherein the step of forwarding by the FA the
2 registration request to the HA is only performed upon reception of a positive
3 response from the AAA.

1 9. A system for supporting multiple mobile IP sessions with dynamically
2 allocated home IP addresses in a CDMA2000 network, the system comprising a
3 Home Agent (HA), wherein the HA:

4 receives a registration request ultimately sent from a Mobile Node (MN),
5 the request comprising a care-of address (COA) and a home IP address;

6 verifies if any mobility bindings exist for the MN;

7 if yes, verifies if the COA from the registration request is equal to
8 the COA from the latest registration request from the MN;

9 if no, verifies if the home IP address in the registration request is
10 zero;

11 if yes, verifies if the MN has reached its session number
12 limit;

13 if no:

14 creates a new mobile IP session for the MN;

15 and

16 if yes:

17 retrieves the home IP address associated
18 with the first mobility binding for the MN;

19 removes any other mobility binding for the
20 MN; and

21 returns a registration response.

1 10. The system of claim 9, wherein the HA to create a new session:

2 allocates dynamically a home IP address for the MN; and

3 creates a mobility binding for the MN.

1 11. The system of claim 9, wherein, if the home IP address in the registration
2 request is not zero, the HA further:
3 refreshes the mobility binding.

1 12. The system of claim 9, wherein, if no mobility bindings exist, the HA
2 further:
3 creates a new mobile IP session for the MN, to what end it:
4 allocates dynamically a home IP address for the MN; and
5 creates a mobility binding for the MN.

1 13. The system of claim 9, wherein, if the COA from the registration request
2 is equal to the COA from the latest registration request from the MN, the HA
3 further:
4 verifies if the home IP address in the registration request is zero; and
5 if yes, creates a new mobile IP session for the MN, to what end it:
6 allocates dynamically a home IP address for the MN; and
7 creates a mobility binding for the MN; and
8 if no, refreshes the mobility binding for the MN.

1 14. The system of claim 9, further comprising a Foreign Agent (FA) that
2 forwards the registration request to the HA.

1 15. The system of claim 14, further comprising an Authentication,
2 Authorisation and Accounting Server (AAA), and wherein, prior to forwarding by
3 the FA the registration request to the HA, the FA further:

4 sends a message to the AAA to verify if the AAA approves the
5 registration request; and

6 receives a response from the AAA.

1 16. The system of claim 15, wherein the FA only forwards the registration
2 request to the HA upon reception of a positive response from the AAA.

1 17. A Home Agent (HA) for supporting multiple mobile IP sessions with
2 dynamically allocated home IP addresses in a CDMA2000 network, the HA
3 comprising an Input/Output unit and a processing unit, wherein:

4 the Input/Output unit:

5 receives a registration request ultimately sent from a Mobile Node
6 (MN), the request comprising a care-of address (COA) and a home IP address;
7 and

8 sends relevant data from the registration request to the processing
9 unit;

10 receives data for a registration response from the processing unit;

11 and

12 returns the registration response; and

13 the processing unit:

14 verifies if any mobility bindings exist for the MN;

15 if yes, verifies if the COA from the registration request is
16 equal to the COA from the latest registration request from the MN;

17 if no, verifies if the home IP address in the registration
18 request is zero;
19 if yes, verifies if the MN has reached its session
20 number limit;
21 if no:
22 creates a new mobile IP session for
23 the MN; and
24 if yes:
25 retrieves the home IP address
26 associated with the first mobility binding for
27 the MN; and
28 removes any other mobility binding
29 for the MN.

1 18. The Home Agent (HA) of claim 17, wherein the processing unit to create a
2 new session:
3 allocates dynamically a home IP address for the MN; and
4 creates a mobility binding for the MN.

1 19. The Home Agent (HA) of claim 17, wherein, if the home IP address in the
2 registration request is not zero, the processing unit further:
3 refreshes the mobility binding.

1 20. The Home Agent (HA) of claim 17, wherein, if no mobility bindings exist,
2 the processing unit further:

3 creates a new mobile IP session for the MN, to what end it:
4 allocates dynamically a home IP address for the MN; and
5 creates a mobility binding for the MN.

1 21. The Home Agent (HA) of claim 17, wherein, if the COA from the
2 registration request is equal to the COA from the latest registration request from
3 the MN, the processing unit further:

4 verifies if the home IP address in the registration request is zero; and
5 if yes, creates a new mobile IP session for the MN, to what end it:
6 allocates dynamically a home IP address for the MN; and
7 creates a mobility binding for the MN; and
8 if no, refreshes the mobility binding for the MN.

1 22. The Home Agent (HA) of claim 17, further comprising a memory that:
2 receives requests for data from the processing unit; and
3 returns the requested data to the processing unit.